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ABSTRACT

Microcomputer technology can assist students in two important phases of basic skills instruction--acquisition and application. Providing interactive practice with immediate feedback in a way that most students find motivating, microcomputers can help students build a solid foundation in such basic skills as punctuation use. In addition, word processing software offers students a holistic method of implementing basic language arts skills instruction. When used with the language experience approach to teaching reading, for example, microcomputers can easily record, store, and print student stories. Both increasing student awareness of the manipulative quality of language and facilitating revision, microcomputers can be used in creative or structured writing activities and instruction in writing technique. Word processing programs can guide sentence combining activities. Although an effective instructional tool, microcomputers can neither teach nor evaluate writing content--teachers and students must work on that together. When selecting word processing programs, teachers should consider the clarity of instructions, the availability of directions, and the functions performed, such as making additions, deletions, insertions, word searches, and text movements. (A list of word processing programs, with their publishers' addresses and machines used are appended.) (MM)

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BEYOND BASIC SKILLS: USING THE MICROCOMPUTER TO EXTEND BASIC SKILLS INSTRUCTION IN THE LANGUAGE ARTS

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BEYOND BASIC SKILLS: USING THE MICROCOMPUTER TO EXTEND BASIC SKILLS INSTRUCTION IN THE LANGUAGE ARTS

Karen L. Piper

Microcomputer technology offers opportunities for meaningful basic skills instruction in the language arts. Current research suggests that microcomputer based instruction is at least as effective as more traditional instructional approaches (Bracey, 1982). Similar research reports that student gains with microcomputer based instruction can be achieved in less time than is needed in the traditional classroom (Caldwell, 1979). These findings are applicable in the language arts classroom because much of the instruction that takes place there is 'basic skills' in nature--reading, spelling, and writing. Many microcomputer programs currently on the market address these areas. However, when some people think of 'basic skills,' they only consider the rote memorization activities commonly found in workbooks and some microcomputer programs. Useful basic skills instruction is actually a two-level process--that of learning the generalization or rule for a skill and the act of applying this rule in a useful manner.

Basic skills acquisition in reading and writing is a necessary foundation for the successful application of these skills in the real world. We can help students meet the intended objectives of basic skills instruction by providing them with activities that emphasize meaningful applications of these skills. For many learning experiences rote memorization and extensive practice are indispensable and inescapable. In the language arts, for example, students must become skilled in the use of punctuation and capitalization rules, spelling and common phonetic generalizations, and vocabulary drill such as prefix, suffix, and root word study. Students need

to have a knowledge base in these areas before they can effectively practice and apply these skills in real life situations. As they are becoming skilled in the basics, students should have the opportunity to apply these skills in meaningful situations. The microcomputer can assist the student in both of these important phases of basic skills instruction--acquisition and application. This article describes these two phases of microcomputer use in the language arts. Phase One briefly describes the effective use of microcomputers in basic skills acquisition. Phase Two details the use of microcomputer word processing in the extension of basic skills through creative writing, structured writing technique, and structured writing activities.

PHASE ONE--Basic Skills Acquisition

In tasks such as punctuation exercises, the microcomputer is extrememly worthwhile as a tireless, patient teacher, providing interactive practice with immediate feedback in a way that most students find motivating. Effectively used, this tutor can help students build a solid foundation in basic skills knowledge.

Many basic skills programs currently on the market make excellent use of the capabilities of the microcomputer. These quality programs generally have some common characteristics. First of all, they provide opportunities for students to go beyond the act of writing on a workbook page. Programs that actively involve the student and whose progress is contingent upon responses made by the learner are termed interactive. Such programs involve the student in basic skills practice on a more personal level. Appropriate feedback in response to answers chosen enables learners to immediately and continually assess their abilities. Due to game-like formats and the appropriate use of color, graphics, and/or sound, these programs are often highly motivational. Attributes such as these can make basic skills programs highly useful in language arts classrooms.

However, basic skills instruction using the microcomputer need not stop here. A logical extension of the foundation established in part by these types of microcomputer programs is the use of microcomputer-based activities that encourage holistic, meaningful application of these skills.

PHASE TWO--Extending Basic Skills with Word Processing

What can be more applicable to reading and writing instruction than the acts of reading and writing themselves? Microcomputer based delivery of basic skills instruction can go beyond the presentation and practice of skills in meaningful, well-developed programs. Students need to build upon the foundation acquired through the use of drill and practice or tutorial programs. Word processing software offers students a method for impelmenting a holistic approach to instruction in basic language arts skills. Instead of working from part to whole, as is commonly done in many drill and practice situations, the student works on the whole, polishing the parts as the whole develops. For instance, as the word processing student types his/her creative writing exercise onto the screen, refining and preparing it for future edits, the student applies the basic skills learned previously--punctuation, capitalization, structure, spelling, and vocabulary. As the whole develops, the student sees a need for the correct use of the parts.

Although some of the applications have changed, the use of word processing microcomputers in language arts classes is not especially new. Way used a computer and the Language Experience Approach (LEA) in the 1969 DOVACK project and achieved positive results (Mason, 1981). The Language Experience Approach is a method of reading instruction that uses the child's language as a starting point for instruction. Students are provided with a stimulus, such as a trip to the zoo or an activity. Then, each student

dictates a story about his/her experience as the teacher records it. Later, these stories are illustrated and used for letter/word recognition, phonics, capitalization/punctuation study, and recreational reading. Word processing software allows a teacher to record student language experience stories easily, revise them as needed, and print them out for student use, edits, and/or display.

While this approach may have worked using large computers, it was not very useful to most teachers because of machine size, environmental constraints, and cost. The development of the microcomputer made this technology more accessible to the classroom teacher. Martin (1981) reports positive results with microcomputers used in elementary Language Experience Approach (LEA) to reading instruction in which student stories are generated on the microcomputer and then printed for further instructional use. Martin developed a system in which children learn to read from writing. In Martin's project, children are taught to write words at first the way they sound. Then, using the computer as tutor--the interacting agent with the learner--the child is able to create writing that he/she can read. In addition, the computer can invite specific student responses, sort them, reject or accept them, and make appropriate variations. Martin found that the students were not only motivated to learn to read, but that they also experienced gains in reading growth.

Although teachers find them useful, microcomputers with attached printers are also an exciting tool for direct student use. Microcomputer word processing, or text manipulation, intrigues students, tempting them in their role as creative language users. Several qualities of writing with the microcomputer make it a viable tool for writing instruction in the language arts. Among these qualities are: 1) enhanced student motivation and interest, 2) enhanced student awareness of the manipulative quality of language, 3) increased likelihood of student revision of writing, 4) the provision of immediate feedback through

print-outs and spontaneous interaction with video display, and 5) easy storage and ready availability of actual student writing samples.

Because of these qualities and the accessibility of word processing packages for microcomputers, many instructional applications are possible. Examples of using the microcomputer in a holistic, integrated fashion that extends basic skills instruction include: 1) creative writing activities, 2) instruction in writing technique, and 3) structured writing activities.

Creative Writing

One extension of the Language Experience Approach is the use of the microcomputer as a tool for creative writing. Creative and responsive student writing using the microcomputer increases the likelihood of better quality writing for several reason. First, current word processing software, such as Spellstar and Grammatic, note and correct spelling and grammatical errors, respectively. In this way, mechanical problems in the writing act may be lessened. It is important to note, however, that such software is but a tool. Word processing can make the mechanical act of writing easier and reduce reluctance to write, but students should understand the processes behind the corrections for those tools to be used most effectively. Teachers should provide writing instruction so that students learn from these tools instead of simply using them as writing crutches. Without proper instruction, student papers may improve mechanically through the use of grammar and spelling correction programs, but may not improve in content. Schwartz (1982) calls this phenomenon "smokescreen revision," and cautions that teaching students to strive for substance in content is a role the teacher must fill. Students

must be taught that 'facelifting' does not cover flaws in meaning and structu

While writing aids may make the composition act mechanically easier, better quality student writing is also precipitated by other factors, such as motivation to compose using the microcomputer. Possibly the major reason for this phenomenon is the ease with which revisions can be made. One of the major stumbling blocks to enhancing the quality of student writing is that the average student is reluctant to spend the amount of time necessary to rewrite or restructure a paper. Dr. Mimi Schwartz (1982) states that while revisions are a natural part of the writing process, too many students see them as punitive. Word processing programs help alleviate this painful rewriting process by virtue of the fact that revisions, deletions, insertions, general corrections, and even movement of blocks of text are made with relative ease. Immediately following revision, a printout can be obtained and corrections made. This process can serve to encourage the student to edit the paper and improve it. By allowing learners to generate language without the penalty of recopying or retyping, teachers can encourage students to be more reflective and to employ more decision-making about how to communicate ideas. The writing act no longer need be largely a mechanical one. With the mechanical process made easier by the microcomputer, students can afford to become more creative and discriminating in the generation and expression of ideas.

Structured Writing Technique

While the microcomputer functions well as a tool for instruction in creative writing or exposition, it can also be used to deliver instruction in structured writing technique. One such method of structured writing instruction that is particularly applicable to the microcomputer is sentence combining.

Sentence combining is the process of combining clusters of kernel sentences into a 'writeout' that is more syntactically complex than the separate kernel sentences and embodies all of the separate ideas represented in the kernel sentences. The students with whom she worked were able to successfully complete the sentence combining task and indicated that they enjoyed the experience, as well.

As Bradley suggests, sentence combining activities are easily adapted to word processing programs. The manipulative and interactive qualities of these exercises are appropriately adaptable to the functions that can be performed using word processing programs on microcomputers. Students can be assigned the task of revising a cluster of kernel sentences into a single sentence using embeddings and deletions. For example, given the cluster:

1. The sky was blue.
2. The sky was clear.
3. The sky was over the mountain.

the student uses the word processor to perform additions and delete redundant words, producing the 'writeout':

The sky over the mountain was blue and clear.

Perhaps the most important use of the computer in sentence combining activities is that the sentence can be turned many different ways and polished without messy scribbling. Thus, there may be many different 'correct' versions of the sentence cluster combinations. The teacher, student, and student edit teams can then judge the 'writeouts,' searching for the incorporation of appropriate meaning, usage, mechanics, and syntax.

It is important to note that the microcomputer is but a tool in this process. It cannot judge the correctness or appropriateness of the resulting sentences. Evaluation is part of the instructional process. Teachers need to assist individual students and student edit teams as they explore the writeouts.

Student attention must be focused on the structure, use of punctuation, capitalization, spelling, and meaning of the resulting writeout to ensure that this technique is used effectively.

Research at Texas Tech University is exploring the use of microcomputer-delivered instruction in sentence combining for the purpose of increasing both writing skills and reading comprehension. In a pilot study, students used Apple II computers and the Apple Writer word processing program to combine microcomputer-delivered clusters into writeouts that embodied the meanings of the clustered kernel sentences. The students were able to manipulate the various ideas within each cluster until they produced a writeout that 1) embodied all of the ideas expressed in each cluster and 2) was structurally correct. At this point, students were asked to expand the ideas expressed in the writeout into a story.

The second part of the project entailed printing out each student's story for editing and revisions. The teacher watched, helping students as needed, and student edit teams read and revised their own papers. Possible revisions were suggested by students and each author went back to the microcomputer to revise his/her own work. Students were very proud of the work they had produced without teacher prompts, and they edited not only for mechanics (mainly capitalization and punctuation), but also for content. Results of this six-week study are positive, especially in measures of students' motivation to write using the sentence combining activities microcomputer delivered, and in writing maturity as measured by syntactic maturity. In addition, students were able to transfer these techniques from the microcomputer to the paper-pencil writing process, as composition posttests indicate the use of sentence combining techniques and resultant structures not evident in pretests or control group compositions (Piper, 1983).

The microcomputer can be a useful tool in instruction in structured writing technique. Effective use of word processing software can encourage students to use their knowledge of basic skills to produce written material. The use of structured writing technique, like sentence combining and subsequent expansion, provides a forum for applied practice in a motivating, non-punitive writing atmosphere. The following section describes the use of word processing for structured writing activities.

Structured Writing Activities

Besides providing a viable means of actual instruction in technique, microcomputer-delivered sentence combining exercises and other teacher-developed activities can provide motivation for further writing. Students can easily expand structured writing activities into creative writing exercises.

One possibility for structured writing instruction using the microcomputer requires that the teacher prepare 'files,' or written paragraphs or stories, for student correction and/or expansion. Teachers can create their own story starters or kernel sentence exercises in such files and assign them to students for correction and expansion. Using the word processing program, the student can actively apply basic skills knowledge and practice writing technique. For example, given a text file of a paragraph containing incorrect use of capitalization generalizations (or punctuation or spelling rules), students can apply their basic knowledge of these skills as they edit, making appropriate corrections to papers (their own or a peer's). In addition, the presentation of kernel sentences in text files can encourage students to expand the ideas presented using the addition of modifiers, phrases, or clauses, yielding new sentences, paragraphs, or stories. As a part of the microcomputer sentence

combining research study (mentioned earlier), students received printouts of their expansions and were asked to work in edit teams to suggest revisions to each other's papers (Piper, 1983). Knowing that their papers would be edited by their peers was an added incentive for quality writing, and editing itself became a learning experience. Such text files for structured writing activities are not only useful, but are easy to set up and well received by students.

WORD PROCESSING PROGRAMS

As in any other learning task, materials and teacher preparation are the keys to successful student use of instructional word processing. Depending on the brand and/or model of microcomputer available, several word processing programs exist that can easily be used by students. Some of these programs and the hardware on which they run are included in the Appendix of this article.

One word processing program, Bank Street Writer, was specifically designed for use by students in grades four through nine. It is very easy to use, has upper and lower case letter display, spaces between lines of print for easy reading and revisions, and avoids splitting words at the end of a line, all of which contribute to its appropriateness for student use. Each program being considered for student use should be examined for these qualities and others, such as: clarity of directions, availability of instructions when needed ('HELP' commands), and functions performed. Students will have to be able to make additions, deletions, insertions, word searches, and text movements at the very least. Most word processing programs currently on the market will accomplish these tasks, but with varying ease. Once the program has been

chosen, it is imperative that the teacher become adept in its use before presenting the program to students.

CONCLUSIONS

Microcomputers can be used to deliver or assist with language arts instruction on many different cognitive levels. Because students vary in their learning styles and instructional needs, teachers should be open to using all of the capabilities of microcomputers in language arts education, including drill and practice and word processing. The implementation of holistic instruction by way of word processing used on a microcomputer offers students opportunities to implement the skills acquired through the use of basic skills courseware. Language arts drill and practice programs can then be used as they were intended--to refine and reinforce various components of reading and writing skills and to provide a broad foundation of knowledge. Such a combination of product-oriented courseware and process-oriented courseware for the microcomputer allows teachers to take students beyond the basic skill level of computer-assisted instruction in the language arts. By using the microcomputer in both phases of basic skills instruction, language arts teachers can make the best use of microcomputer technology while meeting the needs of students in the eighties.

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APPENDIX

Word Processing Programs for Microcomputers

A Sampling

PROGRAM TITLE	PUBLISHER/ADDRESS	MACHINE/MEMORY
Apple Writer	Apple Computer Inc. 10206 Bandley Dr. Cupertino, Ca. 95014	Apple II, Apple II+ 48K minimum
Bank Street Writer	Scholastic Inc. 731 Broadway New York, NY 10003	Apple II, Atari 800 48K minimum
Letter Perfect	LJK Enterprises P.O. Box 10827 St. Louis, Mo. 63129	Apple II, Atari 800 48 K
Word Handler	Silicon Valley Systems 1625 El Camino Real Belmont, Ca. 94903	Apple II, 48K
Wordstar	MicroPro 33 San Pablo Rd. San Rafael, Ca. 94903	Apple 16-sector (64K) IBM-PC, CP/M based machines
Atari Word Processor	Atari Computer Box 427 Sunnyvale, Ca. 94086	Atari 800, 48K
Quick Brown Fox	Quick Brown Fox 548 Broadway Suite 4F New York, NY 10012	VIC-20, Commodore 64 (64K)
Wordpro 3 Plus	Commodore Bus. Machines 300 Valley Forge Square King of Prussia, Pa.19406	PET, 32K
Easy Writer	IBM P.O. Box 1328 Boca Raton, Fl.	IBM-PC, 64K
Easy Writer Pro	Infor. Unlimited Software 2401 Marinship Way Sausalito, Ca. 94965	Apple II (48K)

PROGRAM TITLE	PUBLISHER/ADDRESS	MACHINE/MEMORY
Electric Pencil	UG, Inc. 1260 West Foothill Blvd. Upland, Ca. 91786	TRS-80, Model I(32K) " , Model III(16K)
SuperScripsit	Tandy Corporation 1800 One Tandy Center Fort Worth, Tx. 76113	TRS-80, Model I " Model III,(48K)
TI Writer	Texas Instruments Inc. 2301 N. University Lubbock, Tx. 79408	TI 99-4/A (48K)
ScreenwriterII	On-Line Systems 36575 Mudge Ranch Rd. Coarsegoal, Ca. 93615	Apple II + (48K)